FOR DISCUSSION ONLY

HUMAN RESOURCE PROFILE OF THE LOGGING AND FORESTRY SERVICES SECTOR

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INTRODUCTION

There is a broad consensus among those in the labour market field - government, industry, labour unions and those involved in education and training - that analysis of current and future labour market conditions at the occupational level is an essential element of human resource planning. To help meet that requirement, the Canadian Occupational Projection System (C.O.P.S.), has been charged with the responsibility of acquiring and projecting detailed employment information at both the industrial and occupational levels. To assemble an accurate data base, COPS feels it is essential to include the private sector itself in the process, by seeking their advice and comments on the information COPS has generated. COPS feels that it is in the interest of the private sector to assist in the compilation of a labour market information base to permit the formulation of more effective policy in the human resource area.

The starting point for the C.O.P.S. projection of occupational requirements to the year 1992 is a set of scenarios, for the economy as a whole, which presents possible alternate growth paths for macro economic variables - inflation, production, wage rates, productivity, etc. - that reflect views ranging from pessimistic to optimistic about future economic conditions. Factors considered include the assumed strength of the U.S. economy, the degree of consumer confidence, movement in energy prices, shifts in the population and changes in interest rates. Sets of detailed industry output, productivity and employment projections are then generated, corresponding to the most likely scenario. Industry employment projections are finally converted into estimates of detailed occupational requirements on the basis of observed occupational structures of industries at the time of the 1981 Census. Therefore, occupational employment projections presented in this document are based on the premise of fixed occupational structures for the logging and forestry services industry throughout the projection period. These projections depend, then, on rather restrictive assumptions. Wherever possible, provincial analysis is included and wherever historic data is used, the latest possible numbers are employed.

Although the information COPS has produced in this way may be useful in its own right, it lacks the benefit of the advice and judgement of knowledgeable representatives of the sectors themselves. This document, then, has been conceived to stimulate such input. To that end, we seek your assistance on a number of aspects of your sector, as follows:

(1) Background/Environment: Do you feel the background outlined is a reasonable description of current activity in your sector? What economic influences will affect future growth?

(2) Outlook: Does the pattern of employment, output and productivity changes projected in your sector appear reasonable, in light of what you know about technological developments and changes in product mix?

(3) Geographical Distribution of Employment: Do you foresee any events that could alter the regional pattern projected for your sector?

(4) Occupational Profiles: What events (technological or market in origin) do you foresee will change the occupational composition of your sector?

(5) Occupational Labour Market Conditions: Do you agree with this occupational analysis? Do you foresee any factors which will make it difficult for positions in the forestry industry to be filled in the future?

In the ensuing sections, we will elaborate upon the above questions and give you a chance to answer them. All of the questions are included in the appendix, Part I. Also, the appendix, Part II, contains a more in-depth explanation of C.O.P.S. itself.

I. SECTOR DEFINITION AND PROFILE

1.1 Sector Definition

C.O.P.S. has taken the logging and forestry services sector to include the following major subsectors, as defined by the Standard Industrial Classification Manual, Statistics Canada, 1970.

SIC 041 Logging Industry

Establishments primarily engaged in harvesting round wood whether on an own-account or on a contract basis. Included are establishments engaged in the combined activities of driving, booming, sorting and rafting and towing of wood. Barking mills are also included.

SIC 051 Forestry Services Industry

Establishments primarily engaged in gathering forest products, in forestry patrol, fire inspection and fire fighting; in forest nurseries, reforestation and other forestry services. Forestry farms and timber crop operations are also included here.

QUESTION I

Do you feel the present industry grouping is the most appropriate and beneficial to your data and planning needs? If not, please detail what industries should be included or excluded.

1.2 National Profile

Within the logging and forestry services industry itself, in 1982, the most recent year for which the appropriate data is available, logging accounted for 96 percent of employment. Forestry services accounted for a small proportion of employment, as shown in table 1 below.

Table 1

EMPLOYMENT STRUCTURE OF THE LOGGING AND FORESTRY SERVICES INDUSTRY (1983)

	SIC CODE	EMPLOYMENT	(% Share)
Logging	041	45,943	95.7
Forestry Services	0511	2,060	4.3
Total		48,003	100.0

Source: Canadian Occupational Projection System; Census of Manufacturing, Statistics Canada (25-201).

In the same year, the logging industry in Canada had about 3,000 establishments, about the same number as the wood products industry and about four times as many establishments as the paper and allied products industry.

The forestry industry creates a 'spin-off' employment effect in other sectors of the economy. In 1979, for every person employed directly in the logging and forestry services industry, there were 1.8 people employed elsewhere in the economy as a consequence of the industry's activity.

QUESTION II

Do you agree with this profile of your industry? Do you foresee any major change in your industry structure in the medium term?

1.3 Industry Linkages

There are important linkages between the logging and forestry services, solid wood products and paper and allied products industries in Canada. In 1980, 46 percent of logging and forestry sales were made by the sawmilling industry, almost 30 percent of sales were made by the pulp and paper industry. Another 13 percent of logging and forestry services sales was made to the forestry sector itself. Less than 3 percent of sales went directly to export markets.

Table 2

MAJOR MARKETS FOR CANADIAN LOGGING AND FORESTRY SERVICES INDUSTRY (1980)

Sales 1980	Percentage Share
Sawmills	46.3
Pulp and Paper Industry	29.6
Logging and Forestry Services	12.8
Veneer and Plywood Mills	4.4
Miscellaneous Wood Industries	1.6
Log Exports	2.6
Other	2.7
Total Sales	100.0

Source: Data Resources of Canada; Statistics Canada, The Input-Output Structure of the Canadian Economy in Constant Dollars (15-202).

In the same year, 13 percent of the industry's inputs came from the logging and forestry services sector itself. A significant percentage of its inputs consisted of services such as truck transport, machinery repair services and water transport.

Table 3

MAJOR SUPPLIERS OF THE CANADIAN
LOGGING AND FORESTRY SERVICES INDUSTRY (1980)

Purchases 1980 Source	Percentage Share
Logging and Forestry Services	12.8
Truck Transport	9.7
Operating Supplies	8.1
Machinery Repair Services	2.9
Water Transport	2.1
Repair Construction	2.0
Other[1]	62.4
Total Purchases	100.0

1. This category includes a large number of relatively small supplies. They include, among others, petroleum refineries, other financial, insurance and real estate, miscellaneous services to business and persons and wholesale trade.

Source: Data Resources of Canada; Statistics Canada, The Input-Output Structure of the Canadian Economy in Constant Dollars (15-202).

QUESTION III

Do you feel the industry linkages section provides an accurate description of your current major markets and suppliers? Do you foresee any major change in this market structure over the medium-term?

II. BACKGROUND/ENVIRONMENT

2.1 Logging

Because the logging industry is a major supplier of wood to the wood products and paper and allied products industries and because these two industries rely on the export markets for about half their sales, the logging industry is indirectly linked to the export market. Indeed, logging is governed largely by external supply and demand factors. One of the most important factors is North American housing activity which is highly cyclical and sensitive to interest rates.

Historically high interest rates in the early 1980's precipitated the deepest downturn in the logging industry in 40 years. And while some improvement has occurred in the housing market since 1983, the industry is still in a situation of oversupply, depressed prices and intense international competition.

Factors such as the relative value of the dollar bear directly on Canada's competitiveness internationally. The country's competitiveness has been weakened in European markets, for instance, due to the dollars strength relative to European currencies. And while investment in technically advanced equipment and processes is necessary to promote competitiveness, according to some analysts, the industry is not in a financial position to do so.

However, Data Resources Inc. (DRI) predicted in 1985 that the industry's gains in the last few years will be sustained at least over the next decade. They indicate North America's main competitors (USSR and Scandinavia for instance) face increasing problems associated with declining timber supplies and will be less able in the future to compete on world lumber markets. They predict that relief from the current excess supply problem in the North American softwood lumber industry will occur in the second half of the 1980's. The growth in softwood lumber demand will push the operating rates up to an average annual rate of 89% and return profitability to the industry.

Throughout the remainder of the 1980's the strong U.S. dollar and low Canadian stumpage costs, according to DRI, should continue to work to the advantage of Canadian producers and allow them to maintain their U.S. market share. However, because Canadian lumber producers may start to run up against resource constraints in the 1990's that will inhibit further capacity expansion.

2.2 Forestry Services

Forestry services include establishments primarily engaged in forestry patrol, fire inspection, fire fighting, forest nurseries, reforestation (silviculture) and other forestry services, whether conducted by government organizations or other organizations.

Forestry in Canada has undergone a great deal of change especially during the last few decades. Expenditures on forest management have been increased by approximately 30 percent since 1977 and the amounts invested in forest renewal have increased even more dramatically during this period.

In addition to increased expenditures, a number of initiatives have been undertaken to ensure the orderly development and renewal of the timber resource. Many developments in forest products markets, the pace of economic growth and technologies, as well as timber harvesting and processing have occurred since current forestry policies, institutions and targets were established.

These fundamental changes in forestry have led to an emphasis on intensive forest management and are creating a demand for experienced silviculture workers. The introduction of sophisticated manufacturing and harvesting technologies and the need to extract maximum productivity from a forest resource in transition to a second-growth managed forest, is having and will continue to have a marked effect on the skills required by mill and woodland employees.

Silviculture offers a number of employment opportunities. To date, its workforce has been characterized by people who are hired to plant seedlings and then leave at the end of the planting season. One of the primary challenges in the forestry sector, therefore, is reducing the seasonality of silviculture employment through the pursuit of effective reforestation and stand tending activities. More emphasis on timber crop yields rather than on the number of trees planted would provide more year-round employment.

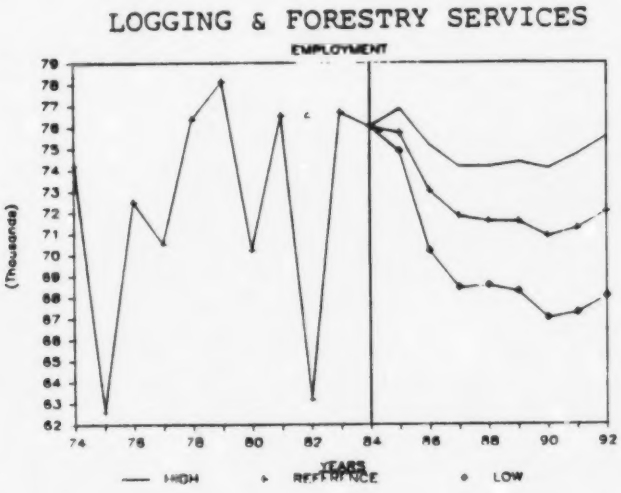
QUESTION IV

Do you feel the background outlined is a reasonable description of the environment and major issues facing your industry? What other factors or economic influences do you think could affect the future growth of your sector?

III. OUTLOOK

Included in each category in this section (employment, output and productivity) are three forecasts, or scenarios, provided by the Canadian Occupational Projection System.

3.1 Employment



Source: CANADIAN OCCUPATIONAL PROJECTION SYSTEM

Declines in future employment growth as shown in the 'reference' growth path above, are not expected to be reversed until 1991 and then growth will be around the one percent range for the 1991-1992 period. From 1985 to 1990 the industry is expected to experience a steady but diminishing drop in employment, averaging -2.1 percent.

Between 1974 and 1979, two peak economic growth periods for Canada, the average increase in employment for this industry was 1.8 percent. The upward trending of employment, however, was not repeated in subsequent years. There has been a sustained downward trend since 1979, which didn't even reverse itself during the economic recovery phase of 1982 to 1984. Aside from an increase in 1983, average employment from 1981 to 1984 has fallen 9.2 percent. This downward trend is projected to continue until the end of the decade, but at a slower rate.

Of the major producing provinces, British Columbia is expected to experience the greatest reduction in employment in the immediate forecast period. Between 1986 and 1987, forestry employment is predicted to fall about 2 percent. Employment in the other major producing provinces will fall only marginally.

These employment projections are based on assumptions designed to reflect moderate economic growth. In this 'reference' case, United States and Canadian real growth averages about 3 percent over the forecast period. Inflation in both countries is fairly stable, fluctuating between 5.5 percent and 6.5 percent but real interest rates remain at historically high levels. Oil prices were not expected to fall as rapidly and dramatically as they have in recent months. Finally, the Canadian exchange rate appreciates to 80 cents by the opening of the 1990's.

Recent economic developments leave some of the assumptions questionable, especially in light of recent oil price developments. Two alternative scenarios are therefore presented. A 'pessimistic' (low growth) scenario incorporates slower U.S. economic growth, more rapid U.S. inflation and more intense international competition such that Canada's market share in the international sale of primary commodities declines. Logging and forestry services is among those industries facing the severest impact, manufacturers of solid wood products, pulp and paper will also be impacted. This market reduction would be reflected in the loss of employment opportunities.

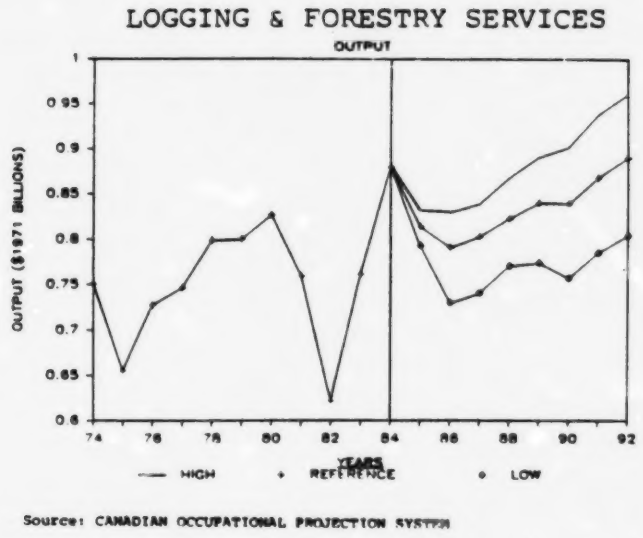
Compared to the reference case, this more pessimistic scenario yields an average of 3,200 fewer employed per year from 1985 to 1992 on a national basis. On an absolute basis this is an average yearly employment level of about 69,000 compared to 72,200. While in the reference case employment falls an average 0.7 percent, the pessimistic scenario yields an average annual drop of 1.3 percent.

The 'optimistic' case presented here is a rapid growth scenario led by the primary sector. Favourable movements in the international prices of primary commodities relative to manufactured products stand out in this

scenario and provide significant impetus for growth in other domestic economies. Improved exports of energy commodities (i.e. natural gas, electricity and coal) and other goods from the logging and forestry services, mineral and fishing industries, and accelerated development of certain major energy projects underlie this high growth case.

The optimistic case results in average employment levels in Canada being about 12,250 above the reference case and 15,400 above the low case, over the forecast period.

3.2 Output



Source: CANADIAN OCCUPATIONAL PROJECTION SYSTEM

Similar to employment, a trend in output can be detected from 1974 to 1979. The output showed a steady upward growth, averaging 1.6 percent. After the recovery from the recession and a slowdown in 1985-86, output is expected to return to the historic growth path of 1974 to 1979. From 1986 to 1992 output is projected to grow 2.0 percent.

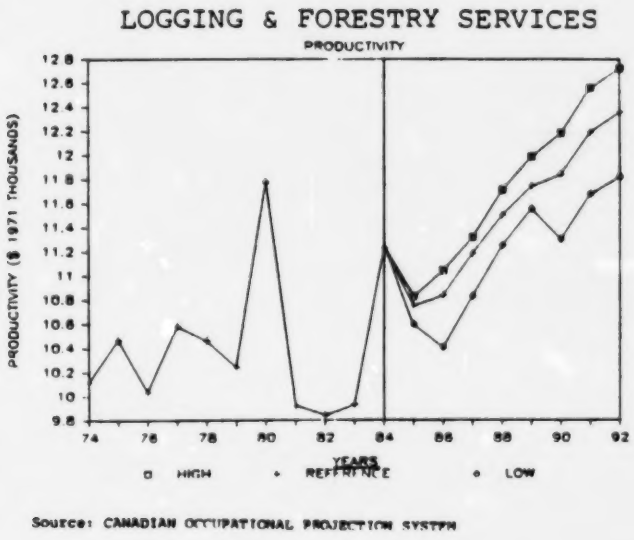
According to the reference case, Quebec, Ontario and New Brunswick are predicted to average about 1.5 percent growth in output from 1985 to 1992. British Columbia is expected to experience a slightly lower 1.0 percent growth.

Real output growth is expected to average 0.3 percent in the low growth scenario and 2.1 percent under the high growth (primary led) scenario.

QUESTION V

Which scenario of the reference, pessimistic or optimistic cases best reflects your view of the future in terms of world and domestic demand for your products?

3.3 Productivity



Source: CANADIAN OCCUPATIONAL PROJECTION SYSTEM

Labour productivity has been calculated directly using real output and employment. The figures represent 'output per labourer per year' and should not be interpreted as meaning the increase in output due to technological change or mechanization.

Productivity in the logging and forestry services sector in Canada has experienced some significant positive and negative shifts, particularly between 1979-80 and 1980-81. Between the historic peak 1974 and 1979 years, the trend in productivity for this industry was marginally negative at -0.5 percent. Another trend, over the longer 1974 to 1984 period shows a 1.4 percent growth rate. This longer trend appears to continue over the projected period, when an increase of 1.2 percent is expected. The increase in productivity predicted over the forecast period is the reason why, with employment declining, output can continue to increase in this industry.

Historically, all four major producing provinces showed erratic productivity gains and losses, particularly Quebec. Ontario posted productivity gains

in eight of the 10 years between 1974 and 1984. It averaged the highest provincial growth - 14 percent compared to just over 1 percent for B.C., 3.6 percent for Quebec and 10.8 percent for New Brunswick.

Under both the low and high growth scenarios, productivity does not vary much from the two percent range. Under the low growth scenario, the average productivity increase is 1.6 percent compared to 2.3 percent under the high growth case.

QUESTION VI

A) Does the pattern of productivity changes projected in your sector appear reasonable in light of what you know about technological developments and changes in product mix?

B) What technologies do you feel will be most significant in the future and how significant do you expect their impact to be on total employment?

IV. GEOGRAPHICAL DIMENSION

4.1 Employment

In table 4 we provide a geographical breakdown of employment in the logging sector for various years. British Columbia, Quebec and Ontario accounted for over 80 percent of total employment in 1975 and 1984. British Columbia's share is expected to drop marginally by 1992 and Quebec's and Ontario's shares are predicted to increase marginally. By 1992, Alberta's share is expected to remain small but the percentage will more than double over 1984.

Table 4

GEOGRAPHIC DISTRIBUTION OF EMPLOYMENT
LOGGING

Province	% Employment			Absolute Level			Contribution to Employment Growth and Decline ( )	
	1975	1984	1992	1975	1984	1992	1975-84	1984-92
Nfld.	4.3	2.5	1.7	2,319	1,258	825	(12.2)	(9.3)
P.E.I.	-	-	-	-	11	4	0.2	(0.2)
N.S.	3.0	2.4	0.8	1,592	1,244	396	(4.0)	(18.2)
N.B.	7.7	8.9	7.4	4,134	4,542	3,584	6.5	(20.5)
Que.	32.2	21.0	23.1	17,288	10,729	11,180	(75.4)	22.6
Ont.	15.0	18.6	19.2	8,028	9,515	9,315	23.8	(4.3)
Man.	1.4	1.2	0.8	769	586	376	(2.1)	(4.5)
Sask.	1.6	1.3	2.6	851	660	1,261	(2.2)	30.6
Alta.	2.1	1.5	3.5	1,141	778	1,711	(4.2)	46.8
B.C.	32.6	42.7	40.9	17,500	21,843	19,833	69.5	(43.1)
Canada	100.0	100.0	100.0	53,622	51,166	48,485		

Source: Canadian Forestry Statistics, Census of Manufacturing, Statistics Canada (25-202); Canadian Occupational Projection System.

British Columbia experienced a significant increase in employment over the 1975 to 1984 period (about 25 percent). In fact together with Ontario, the two provinces accounted for virtually all of the employment gains in Canada. Significant employment declines occurred in Quebec, Newfoundland and Alberta. To a lesser extent declines occurred in Nova Scotia and Manitoba and Saskatchewan. British Columbia's strong employment growth will not be repeated during the 1984 to 1992 period when it is predicted to experience an employment decline. Growth will centre in Quebec, Saskatchewan and particularly Alberta where the greatest potential for industry growth exists due to the availability of timber supply.

4.2 Output

Table 5 provides a geographic breakdown of logging and forestry services output for various years. From 1975 to 1984, the provinces which experienced a decline in employment also experienced declines in output. In Alberta output, however, increased while employment declined, suggesting mechanization may have displaced some workers. In British Columbia and Ontario both output and employment increased, however output growth was significantly stronger than employment growth.

From 1984 to 1992, only Newfoundland and Nova Scotia are forecasted to experience output declines. In Ontario and British Columbia where output growth is expected to be strongest, employment is forecast to decline, again likely due to mechanization. However, in Alberta and Saskatchewan, relatively modest increases in output will be accompanied by similar increases in employment.

Table 5

GEOGRAPHIC DISTRIBUTION OF
OUTPUT LOGGING AND FORESTRY SERVICES

	% Output			Absolute Level ($1971 M)			Percentage Contribution to Output Growth and Decline( )	
Province	1975	1984	1992	1975	1984	1992	1975-84	1984-92
Nfld.	3.1	2.4	1.8	20.1	20.2	16.1	0.0	(54.0)
P.E.I.	-	-	-	-	-	-	-	-
N.S.	1.9	1.4	0.9	12.7	11.2	7.7	(5.0)	(46.0)
N.B.	5.8	5.7	5.4	38.2	47.3	48.3	4.5	1.4
Que.	25.6	17.6	16.5	167.5	145.7	146.9	(72.4)	1.7
Ont.	15.4	16.1	18.0	100.6	132.8	160.0	15.9	38.4
Man.	1.8	0.6	0.6	11.5	5.1	5.4	(21.3)	0.4
Sask.	1.5	1.2	1.2	10.1	9.7	10.5	(1.3)	1.1
Alta.	2.3	2.5	2.5	14.9	20.8	22.4	2.9	2.3
B.C.	42.7	52.5	53.1	279.5	434.6	473.3	76.6	54.7
Canada	100.0	100.0	100.0	655.1	827.4	890.6		

Source: Infometrica Ltd.; Canadian Occupational Projection System.

QUESTION VII

Do you foresee any events that could alter the regional pattern projected for your sector?

V. OCCUPATIONAL PROFILE

To assist sectors in forecasting their future skill needs, C.O.P.S. generates projections of employment at the detailed occupational level. The approach taken assumes that the individual sector's 1981 skill mix will not change for the rest of the decade, which may or may not be accurate. In order to identify how that skill mix might in fact evolve in the next ten years or so in your sector, we are trying to pinpoint those occupations whose relative importance will change, as well as the direction and extent of that change. In addition, we need to know the factors, whether they be technological, economic or demographic, behind this expected change. These are important questions to us and we seek your input here.

In presenting the occupational material we have grouped both logging and forestry services. In the next table, we show the most important occupations (in terms of labour force share), within first, the forestry services sector itself and secondly, the logging sector which is broken down into production workers, office and sales workers and professional workers. In the body of the table, we note for each occupation, the 1971 to 1981 change in mix as well as the 1985 and projected 1992 employment. The growth shown here is 'net' growth. Specifically, the figures do not take into account replacement demand for workers who leave because of retirement, industrial and occupational mobility and other such factors.

The last column of each table is labelled 'response'. This provides the reader with an opportunity to note agreement or disagreement with the projections. If you agree with the forecast then place a check mark beside the occupation in question. If you disagree then place a '↑' if you believe the forecast should be higher than indicated or a '↓' if you feel it should be lower.

Table 6-1

FORESTRY SERVICES

CODE	Labour Force Composition 1971 (%)	1981	Projected Employment 1985	1992 ('000)	Change	Response
1131 Managers - Natural Science	0.01	0.03	0.1	0.1	0.0	
2135 Life Science Technicians	0.34	1.22	0.8	0.7	-0.1	
2133 Biologists	0.04	0.15	0.1	0.1	0.0	
6119 Protective Services - NEC	0.19	0.27	0.2	0.2	0.0	
7195 Nursery Workers	0.46	1.25	1.0	1.0	0.0	
7511 Forestry Conservation	4.58	4.27	2.9	2.7	-0.2	
7519 Forestry-Logging Occupations - NEC	13.51	8.90	2.4	4.1	1.7	
Subtotal	19.13	16.09	.5	8.9	1.4	

Source: Canadian Occupational Projection System; Statistics Canada, 1971 and 1981 Census of Canada.

Table 6-2 (a)

LOGGING INDUSTRY:
PRODUCTION WORKERS (CANADA)

CODE		Labour Force Composition 1971 (%)	1981	Projected Employment 1985	1992 ('000)	Change	Response
Production Workers							
High-Skilled							
7510	Foremen: Forestry-Logging	7.80	7.72	5.2	5.0	-0.2	
7516	Log Inspecting, Grading & Scaling	1.43	1.44	1.3	1.3	0.0	
8584	Industrial, Farm and Construction, Machinery, Mechanics & Repairmen	2.04	2.89	1.9	1.8	-0.1	
8781	Carpenters	0.46	0.42	0.3	0.3	0.0	
9170	Foremen-Motor Trans	0.24	0.22	0.2	0.2	0.0	
	Subtotal	11.97	12.69	8.9	8.6	-0.3	
Semi and Unskilled							
7513	Timber Cutting	18.28	16.63	20.1	19.1	-1.0	
7517	Log Hoisting, Sorting, Moving	9.35	11.29	9.2	8.7	-0.5	
7518	Occupations in Labouring and Other Elemental Work	7.54	7.85	6.0	5.7	-0.3	
9175	Truck Drivers	5.12	4.63	3.9	3.7	-0.2	
9315	Materials Handling Equipment Operators	2.73	0.95	0.7	0.7	0.0	
8711	Excavating, Grading	1.39	2.04	1.5	1.4	-0.1	
9313	Longshoremen	0.64	0.39	0.3	0.3	0.0	
	Subtotal	45.05	43.78	41.7	39.6	-2.1	

Table 6-2 (b)

LOGGING INDUSTRY:
PROFESSIONAL, OFFICE AND SALES WORKERS (CANADA)

CODE		Labour Force Composition 1971 (%)	1981	Projected Employment 1985	1992 ('000)	Change	Response
Professional, Office and Sales Workers High-Skilled							
2163	Draughtsmen	0.16	0.31	0.2	0.2	0.0	
2161	Surveyors	0.16	0.27	0.2	0.2	0.0	
1175	Purchasing Officers	0.10	0.17	0.1	0.1	0.0	
2139	Occupations in Life Sciences - NEC	0.05	0.56	1.2	1.1	-0.1	
2183	Systems Analysts	0.05	0.15	0.1	0.1	0.0	
1136	Personnel Management Occupations	0.04	0.15	0.1	0.1	0.0	
2159	Professional Engineers - NEC	0.02	0.06	0.2	0.2	0.0	
	Subtotal	0.58	1.67	2.1	2.0	-0.1	
Semi and Unskilled							
4143	EDP Equipment Operators	0.09	0.29	0.2	0.2	0.0	
4153	Shipping Clerks	0.08	0.12	0.1	0.1	0.0	
4157	Weighers	0.06	0.08	0.1	0.1	0.0	
	Subtotal	0.23	0.49	0.4	0.4	0.0	
	SUBTOTAL	76.96	74.72	60.6	59.5	-1.1	
	OTHER OCCUPATIONS	23.04	25.28	15.1	12.5	-2.6	
	TOTAL OCCUPATIONS	100.0	100.0	75.7	72.0	-3.7	

Source: Canadian Occupational Projection System; Statistics Canada, 1971 and 1981 Census of Canada.

QUESTION VIII

(1) Do you expect the labour force composition as presented for 1981 in table 6-1 and 6-2 will change over the next ten years or so? Will there be entirely new occupations emerging in your sector either through new skill needs related to technologies or through combinations of old skills into one occupation ('multiskilling')?
Will some occupations gradually disappear from your industry?

(2) Is the industry experiencing a permanent shift away from the less-skilled towards the high-skilled and highly qualified? In other words, given layoffs in the early 1980's, are recall patterns unlikely to return the low-skilled to previous levels?

(3) Please detail the reasons, whether they be technology, demography or market in origin, for the changes you listed in part 1. We are particularly interested in what technological innovations will affect occupations in the next ten years.

VI. OCCUPATIONAL LABOUR MARKET CONDITIONS

One of the main concerns of industry is the possibility of recruitment problems, especially for highly qualified and highly skilled labour. In this section we examine the overall occupational labour market conditions within which the logging and forestry services industry will be competing in the recruitment of their skilled workers.

6.1 Current Supply and Demand Indicators

In almost all occupations listed in table 7, high levels of unemployment existed over the 1982 to 1984 period. In only two occupations: bookkeeping and systems analysts did the UIC-to-stock ratio[1] remain under 10 percent over that period.

As time passed between 1982 and 1984, however, the UIC-to-stock ratio for seven of the nine occupations fell, but by 1984 the ratio remained significantly higher than that which existed in 1981. Based on 1984 data, one could conclude that a tight labour market situation does not exist in most low-skilled or high-skilled occupational categories. The only exception is bookkeepers and systems analysts.

This observation is confirmed by National Job Bank[2] statistics. In the three occupations noted above, the number of NJB listings were the highest of all occupations in two of the three occupations (professional engineers and systems analysts). The number of NJB listings were in fact significantly higher than for those of the remaining occupations where excess supply is more evident.

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1. UIC-to-stock ratio is the ratio of the number of unemployment insurance claimants within a given occupation to the total number of people in that occupation.
2. The National Job Bank is a registry of long term vacancies at Canada Employment and Immigration Centres. The statistics include jobs available to both Canadian and foreign workers.

QUESTION IX

According to the analysis, labour markets are tight in a few high-skilled occupations, including bookkeepers and systems analysts. Have you recently experienced recruitment difficulties in these occupations, or for other occupations (please specify)?

6.2 Future Conditions

There are a number of factors which determine how successful an industry will be in meeting its occupational needs. Two major ones are the growth of competing industries and the competitiveness of industry wages.

Occupations in table 7 have been divided into three categories: those occupations which the logging and forestry services industry is expected to have difficulty in recruiting, those occupations where there is expected to be some difficulty in recruiting and third, those occupations where very little or no recruiting problem is likely to exist in the future.

In the first occupational category there are two factors which are expected to lead to recruiting problems. First, major competing industries are expected to grow more rapidly than the 2.6 percent growth rate predicted for the Canadian economy as a whole over the 1985 to 1992 period. This situation will presumably cause an increase in demand to apply to key occupations. Also characteristic of this group of occupations is that wages of the logging and forestry services sector are already as high or higher than those of competing industries. If logging and forestry services' wages are among the highest of the table 7 groupings, then the industry may have less flexibility to increase wages further in order to attract the necessary workers. There are three occupations with these characteristics: truck drivers, materials handling equipment operators and excavators.

The second category is one where growth of major competing industries is less than or equal to the national average. At the same time, wages of the logging and forestry services industry are higher than its competitors, limiting its ability to increase wages further to attract workers. These occupations include: forestry conservation and systems analysts. For nursery workers, while forestry wages are lower than competing industries, the growth rates of competing industries are expected to be higher than the national average.

The third grouping is one where the growth rate of competing industries is expected to be at or below the national average growth and wages in the logging and forestry services industry are lower than those of competing industries. This produces a situation where there is less competition for certain occupations than the previous cases. Also, the logging and forestry services sector here has flexibility to increase its wages if necessary. Occupations falling into this category are bookkeepers, biologists and life science technicians.

In the three 'group one' occupations noted above, the logging and forestry services sector may have some difficulty in recruiting in the future. However, recruiting difficulties are not expected to be severe because of the excess labour supply situation that has been described for these occupations in the previous section. In fact, the high wages offered by the logging and forestry services sector were likely required to compensate workers for such factors as remoteness of the work place as opposed to offering high wages in response to tight labour market conditions. In most of the remaining occupations there is a likelihood that the logging and forestry services sector will experience some recruiting problems. In these latter occupations the growth of most competing industries is predicted to be higher than the national average. However, the logging and forestry services sector has some flexibility to increase wages in order to compete with the high growth groups.

QUESTION X

According to this analysis, future recruitment difficulties may occur for forestry conservation workers, systems analysts, truck drivers, excavators, material handlers and nursery workers. Do you foresee any recruitment/hiring difficulties in these occupations or for other occupations (please specify)?

Table 7

INDUSTRY AND WAGE PROFILE
BY OCCUPATION (1981)

SOC	Occupation	Employer[1]	Percentage of Total Employment (1981)	Annual Average Real Growth (1985-92)	Annual Average Wage[2] (1981)
Group One					
9175	Truck Drivers	Miscellaneous Transport/ Storage	36.3	2.9	18,000
		Trade	20.3	3.1	12,500
		Public Admin.	3.7	2.6	15,000
		Forestry	1.5	1.3	20,000
		Other	38.2		
		Total	100.0		
9315	Materials Handling Equipment Operators	Trade	14.1	3.1	14,000
		Wood Products	10.7	0.7	16,500
		Other Food & Bev.	6.2	2.7	15,000
		Forestry	2.0	1.3	19,000
		Other	67.0		
		Total	100.0		
8711	Excavators	Construction	49.4	3.7	16,500
		Public Admin.	9.2	2.6	15,500
		Miscellaneous Transport/ Storage	9.2	2.9	16,000
		Forestry	3.1	1.3	19,000
		Other	29.1		
		Total	100.0		
Group Two					
7511	Forestry Conservation	Forestry	72.3	1.3	10,500
		Public Admin.	19.1	2.6	11,000
		Wood Products	1.8	0.7	11,500
		Other	6.8		
		Total	100.0		

1. In cases where the 'other' category is large it indicates that the occupation is spread over a large number of industries.

2. Includes both Full-Time and Part-Time workers.

Table 7
(Continued)

SOC	Occupation	Employer[1]	Percentage of Total Employment (1981)	Annual Average Real Growth (1985-92)	Annual Average Wage[2] (1981)
7195	Nursery Workers	Public Admin.	24.1	2.6	9,000
		Construction	23.9	3.7	6,000
		Agriculture	11.3	2.8	6,000
		Forestry	1.7	1.3	6,500
		Other	39.0		
		Total	100.0		
2183	Systems Analysts	Business Services	22.1	1.9	19,500
		Public Admin.	16.3	2.6	20,500
		Forestry	0.2	1.3	22,500
		Other	61.4		
		Total	100.0		
Group Three					
4131	Bookkeepers	Trade	24.7	1.3	10,500
		Finance	12.3	1.9	11,000
		Business Services	8.7	1.9	11,000
		Public Admin.	8.2	2.6	13,000
		Forestry	0.4	1.3	12,000
		Other	45.7		
		Total	100.0		
2133	Biologists	Public Admin.	38.1	2.6	23,000
		Education	18.1	0.9	16,500
		Hospitals	13.5	1.6	24,000
		Business Services	11.1	1.9	18,000
		Forestry	1.4	1.3	17,500
		Other	17.8		
		Total	100.0		
2135	Life Science Technicians	Public Admin.	39.2	2.6	14,500
		Education	16.6	0.9	19,000
		Business Services	9.0	1.9	18,000
		Forestry	8.3	1.3	17,500
		Other	26.9		
		Total	100.0		

1. In cases where the 'other' category is large it indicates that the occupation is spread over a large number of industries.

2. Includes both Full-Time and Part-Time workers.

VII. MAJOR ISSUES

The logging and forestry services industries are currently undergoing a period of transition. A number of issues currently confront the forestry sector, issues which will affect its long term development, and subsequently the level of employment in industry.

One of the foremost issues facing this industry today is the downstream effect of the U.S. lumber industry's persistence in seeking means to limit softwood lumber imports from Canada. Several bills are currently under consideration by the U.S. Administration. It is widely assumed that the imposition of a quota or tariff would have an extremely serious impact on the Canadian industry which directly and indirectly depends on the U.S. market for a significant portion of its lumber sales. Protectionist fervor in the United States could result in a loss of 10,000 jobs (in Canada and the United States) in the lumber industry alone, according to the president of the Council of Forest Industries of British Columbia, Mr. T. Michael Apsey. Infometric estimates the overall employment loss could be 15,000 and 20,000.

Another important issue is a projected timber supply shortage due to inadequate forest management. While old growth forests contain larger trees and may have a larger volume per hectare than second growth forests, they also have a higher incidence of decay, waste and breakage, are often expensive to harvest, a long way from the mill and the timber they yield is often handled by old, inefficient sawmills. Second growth forests are often inexpensive to harvest because of their uniformity, are accessible by previously established road systems generally close to mills and the timber can be handled by modern efficient sawmills. Therefore, only a progressive increase in intensive forest management practices can help stabilize both he wood supply and employment in the sector.

In addition, longer term wood supply will depend greatly on the management decisions taken today on matters such as enhanced protection. The forestry sector will have to be able to use tools such as chemical and weed

and pest control to ensure that new forests will grow as they should. If the forest is not protected against its enemies, it will mean a loss of the resource and consequently a loss of revenue and employment.

Another major issue is that the survival of the forest industry in competitive world trade is dependent upon improved productivity, rationalizing of inefficient operation and better marketing techniques. In relation to silviculture, these advents will require a more multiskilled workforce and more training of individuals in the logging industry than in the past. Particularly, the demand for workers skilled in silviculture will continue to increase as the need for this activity continues to grow.

Related to the discussion on employment are the issues of improved job quality and the challenge of reducing the seasonal nature of silviculture work in order to ensure a long-term steady wage rate for workers in that area. Increased reforestation and forest production can offer opportunities to offset the seasonality aspect and lead to more stable and year-round work, not only for silviculture workers but for all forestry workers.

To help deal with the above-mentioned issues, efforts will have to be made to raise the profile and respectability of forestry work (the image being hard work, low pay, no job security, 'for men only') and to increase public awareness of the forestry needs and of the opportunities for careers in forestry especially in silviculture.

QUESTION XI

A) Do you consider these issues as important ones for your sector? What other issues, if any, would you consider to be important?
B) Is future technological change an important consideration and if so, what type of change is anticipated and what effect is it likely to have?

APPENDIX

PART I: QUESTIONS

QUESTION I

Do you feel the present industry grouping is the most appropriate and beneficial to your data and planning needs? If not, please detail what industries should be included or excluded.

QUESTION II

Do you agree with this profile of your industry? Do you foresee any major change in your industry structure in the medium term?

QUESTION III

Do you feel the industry linkages section provides an accurate description of your current major markets and suppliers? Do you foresee any major change in this market structure over the medium-term?

QUESTION IV

Do you feel the background outlined is a reasonable description of the environment and major issues facing your industry? What other factors or economic influences do you think could affect the future growth of your sector?

QUESTION V

Which scenario of the reference, pessimistic or optimistic cases best reflects your view of the future in terms of world and domestic demand for your products?

QUESTION VI

A) Does the pattern of productivity changes projected in your sector appear reasonable in light of what you know about technological developments and changes in product mix?

B) What technologies do you feel will be most significant in the future and how significant do you expect their impact to be on total employment?

QUESTION VII

Do you foresee any events that could alter the regional pattern projected for your sector?

QUESTION VIII

(1) Do you expect the labour force composition as presented for 1981 in table 6-1 and 6-2 will change over the next ten years or so? Will there be entirely new occupations emerging in your sector either through new skill needs related to technologies or through combinations of old skills into one occupation ('multiskilling')?
Will some occupations gradually disappear from your industry?

(2) Is the industry experiencing a permanent shift away from the less-skilled towards the high-skilled and highly qualified? In other words, given layoffs in the early 1980's, are recall patterns unlikely to return the low-skilled to previous levels?

(3) Please detail the reasons, whether they be technology, demography or market in origin, for the changes you listed in part 1. We are particularly interested in what technological innovations will affect occupations in the next ten years.

QUESTION IX

According to our analysis, labour markets are tight in a few high-skilled occupations, including bookkeepers and systems analysts. Have you recently experienced recruitment difficulties in these occupations, or for other occupations (please specify)?

QUESTION X

According to our analysis, future recruitment difficulties may occur for forestry conservation workers, systems analysts, truck drivers, excavators, material handlers and nursery workers. Do you foresee any recruitment/hiring difficulties in these occupations or for other occupations (please specify)?

QUESTION XI

A) Do you consider these issues as important ones for your sector? What other issues, if any, would you consider to be important?

B) Is future technological change an important consideration and if so, what type of change is anticipated and what effect is it likely to have?

PART II: C.O.P.S. - AN IN-DEPTH VIEW

Purpose of the Canadian Occupational Projection System

The basic purpose of C.O.P.S. is to assess the extent to which occupational imbalances seem likely to prevent the economy from achieving its growth potential. This recognizes that a primary role of labour market information is to help improve output and employment growth by speeding up labour market adjustment processes, eliminating manpower 'bottlenecks', and addressing the problems of excess labour supply.

C.O.P.S. Economic Outlooks (Macro-Scenarios)

The outlook for labour market conditions is closely related to the broad outlook for the economy as a whole. The starting point for the approach is, therefore, a projection of economic performance in Canada over the appropriate future time period. Moreover, skill needs depend not only on the broad outlines of economic growth; they are also very sensitive to the industrial composition of that growth. Thus, the projections contain considerable detail on likely changes in the industrial composition of output and employment.

The system seeks to assess the labour market implications of potential economic growth paths. The exercise therefore begins by developing several plausible economic outlooks, using alternative assumptions about developments in the rest of the world and about the broad thrust of economic policy. In this way, the impact of different outlooks on the distribution of skill requirements can be tested.

Projections of Demand for Skills

Having derived consistent projections of output by industry, the next step is to translate these output projections into employment and skill projections. At present, this translation is done using the industry/occupation relationships derived from the 1981 Census. These relationships are also modified on the basis of post trend changes, judgemental inputs, and special sector studies relating to the future.

Labour Supply

Although the data in this report is essentially taken from the labour demand side of C.O.P.S., the labour supply side is an important component of the system.

Information on the labour supply consists mainly of the following:

a) 1971 and 1981 Census of Canada data on:
   - experienced labour force
   - average age
   - average years of schooling
b) Unemployment Insurance Claimant data
c) Immigration data
d) Training Development
e) Attribution estimates
f) Apprenticeship completions

PART III: FORESTRY OCCUPATIONAL DEFINITIONS

FORESTRY SERVICES

1131 - MANAGEMENT OCCUPATIONS: NATURAL SCIENCES, ENGINEERING AND MATHEMATICS

This unit group includes occupations concerned with carrying out managerial and administrative activities, as described under the master title, 01-170 MANAGER (prof. & tech., n.e.c.), in such fields as physical sciences, life sciences, architecture, engineering, mathematics, statistics, systems analysis and computer programming. Occupations in this unit group are engaged in managerial and administrative activities related to Major Group 21, OCCUPATIONS IN NATURAL SCIENCES, ENGINEERING AND MATHEMATICS.

2135 - LIFE SCIENCES TECHNOLOGISTS AND TECHNICIANS

This unit group includes occupations as described under master titles, 01-150 LIFE SCIENCES TECHNOLOGIST (prof. & tech., n.e.c.) and 01-140 LIFE SCIENCES TECHNICIAN (prof. & tech., n.e.c.) concerned with carrying out technological and technical functions in a life sciences specialization, such as botany, zoology, forestry, horticulture and agriculture, using a knowledge of scientific and mathematical principles and laboratory practices.

2133 - BIOLOGISTS AND RELATED SCIENTISTS

This unit group includes occupations concerned with conducting basic and applied research into all forms of living organisms and vital processes, and their relationship to each other and to their environment; studying origin, development, growth, reproduction, structure, function, distribution and other life phenomena, of a single species or community of species. Occupations in this unit group supplement their own field of competence by applying principles, methods, and findings of other scientific disciplines, particularly chemistry, physics and mathematics.

6119 - PROTECTIVE SERVICES OCCUPATIONS, N.E.C.

This unit group includes occupations, not elsewhere classified, concerned with providing other protective services; such as, enforcing fish and game regulations, providing lifeguard services at swimming areas, performing attendant duties at federal and provincial parks, and patrolling ski trails and slopes.

7195 - NURSERY AND RELATED WORKERS

This unit group includes occupations concerned with growing and marketing trees, shrubs and ornamental plants and providing landscaping, groundskeeping and gardening services. Activities include: preparing soil; planting seeds and bulbs; transplanting seedlings; planting, transplanting, pruning and treating trees and shrubs; spraying to control insects and plant diseases; and landscaping and maintaining public and private grounds, parks, cemeteries and sports fields.

7511 - FORESTRY CONSERVATION OCCUPATIONS

This unit group includes occupations concerned with conserving forest areas and woodlots, and protecting them from fire, disease and other hazards.

7519 - FORESTRY AND LOGGING OCCUPATIONS, N.E.C.

This unit group includes occupations, not elsewhere classified, concerned with activities related to forestry and logging.

LOGGING INDUSTRY: PRODUCTION WORKERS

High Skilled

7510 - FOREMEN, FORESTRY AND LOGGING OCCUPATIONS

This unit group includes occupations concerned with supervising and co-ordinating activities of workers engaged in maintaining and protecting forests, cutting and evaluating timber, moving logs from logging site to storage or transportation areas, assembling log booms in water, and performing other related forestry and logging activities.

7516 - INSPECTING, GRADING, SCALING AND RELATED OCCUPATIONS

This unit group includes occupations concerned with appraising timber stands to estimate lumber yields and determine methods of recovery; inspecting and grading logs; estimating their volume and marketable content; and ensuring that logging operations are in accordance with regulations and safety rules.

8584 - INDUSTRIAL, FARM AND CONSTRUCTION MACHINERY MECHANICS AND REPAIRMEN

This unit group includes occupations concerned with repairing and servicing a wide variety of industrial machinery, such as that used in printing, textile manufacturing, mining and in other production processes; material-handling and conveying equipment; farm machinery, such as combines, ploughs, mowers and milking machines; construction equipment, such as bulldozers, graders and cranes; and gasoline and diesel engines associated with industrial, farm and construction machinery. Activities include: diagnosing, disassembling, replacing parts and assemblies, reconditioning, aligning, fitting, reassembling and adjusting to specifications, using common and special hand and power tools and equipment.

8781 - CARPENTERS AND RELATED OCCUPATIONS

This unit group includes occupations concerned with preparing and erecting wooden structures and installing fixtures, using power saws, planes, braces, hammers and other carpentry tools and wood-working machines.

9170 - FOREMEN, MOTOR TRANSPORT OPERATING OCCUPATIONS

This unit group includes occupations, as described under the master title, 01-250 SUPERVISOR/FOREMAN (any ind.), concerned with supervising and co-ordinating activities of workers engaged in operating motor vehicles and providing direct support to motor transport operations.

Semi and Unskilled

7513 - TIMBER CUTTING AND RELATED OCCUPATIONS

This unit group includes occupations concerned with marking trees for cutting, preparing a wooded-area for logging operations, and felling and cutting trees.

7517 - LOG HOISTING, SORTING, MOVING AND RELATED OCCUPATIONS

This unit group includes occupations concerned with rigging log-yarding systems; hoisting cut logs; moving them from the site of operations; sorting logs at points of assembly; forming log booms on water; and other related activities.

7518 - OCCUPATIONS IN LABOURING AND OTHER ELEMENTAL WORK, FORESTRY AND LOGGING

This unit group includes occupations in labouring and other elemental work, as described under the term title, 02-190 LABOURER/ELEMENTAL WORKER (any ind.), concerned with the conservation of forests and wood lots; the loading and piling of logs; and performing other elemental activities in forestry and logging.

9175 - TRUCK DRIVERS

This unit group includes occupations concerned with operating trucks, tractor-trailers and similar vehicles powered by gasoline or diesel engines, over short or long distances, to transport goods and materials.

9315 - MATERIAL-HANDLING EQUIPMENT OPERATORS, N.E.C.

This unit group includes occupations, not elsewhere classified, concerned with operating and tending material-handling equipment, and moving and storing goods and material in sheds and warehouses.

8711 - EXCAVATING, GRADING AND RELATED OCCUPATIONS

This unit group includes occupations concerned with removing earth materials from excavations, grading earth surfaces and dredging irrigation ditches, canals and marine channels. Activities include operating earth-moving equipment to excavate, move, level or load materials and operating air-locks and underground-construction-excavating machines.

9313 - LONGSHOREMEN, STEVEDORES AND FREIGHT HANDLERS

This unit group includes occupations concerned with loading and unloading ships, barges, trucks, rail cars and other transportation conveyances. Activities include: operating and tending materials-handling equipment; assembling cargo in slings; piling goods on pallets to facilitate movement; and stowing cargo in ships, rail cars and trucks.

PROFESSIONAL, OFFICE AND SALES WORKERS

High-Skilled

2163 - DRAUGHTSMEN

This unit group includes occupations concerned with preparing drawings from designers' sketches and specifications for such purposes as manufacture and installation of machinery and equipment, or for construction of buildings, bridges, dams, roads and other civil engineering projects; preparing topographical, political, economic, nautical and other maps and charts; drawing technical manuals dealing with assembly, installation, operation, maintenance and repair of machinery and other equipment; and copying plans and drawings.

2161 - SURVEYORS

This unit group includes occupations concerned with surveying land surfaces to determine boundaries and exact locations, delineate topographic features and measure land areas for the purpose of mapmaking and construction work, surveying mines and delineating surface and underground features to control direction and extent of mining; surveying sea, river and lake beds for such purposes as chart making, determining navigable channels and planning construction of marine structures, and analyzing aerial photographs to prepare to revise topographic maps and charts.

1175 - PURCHASING OFFICERS AND BUYERS, EXCEPT WHOLESALE AND RETAIL TRADE

This unit group includes occupations concerned with buying goods, materials, or business services, for internal use or for further processing in governmental, industrial, business and other institutions, where the items purchased are not for resale. Activities include: establishing requirements of the organization; developing and interpreting specifications for

goods or materials; studying technical publications, documents and advertising material; interviewing suppliers or inviting tenders; conducting special buying missions and negotiating for prices; establishing delivery schedules and performing other functions directly related to purchasing.

2139 - OCCUPATIONS IN LIFE SCIENCES, N.E.C.

This unit group includes occupations, not elsewhere classified, concerned with research in the life sciences; and with other life-science activities; such as, studying, developing and controlling forest lands and resources; and conducting displays and lectures on historical, natural, and scientific features of public parks.

2183 - SYSTEMS ANALYSTS, COMPUTER PROGRAMMERS AND RELATED OCCUPATIONS

This unit group includes occupations concerned with planning, implementing and controlling electronic data-processing services and the programming of computer systems. Typical areas of specialization include: analysis of computer systems; and providing advice on availability and use of electronic data-processing resources, capabilities and technological development.

1136 - PERSONNEL AND INDUSTRIAL RELATIONS MANAGEMENT OCCUPATIONS

This unit group includes occupations concerned with carrying out managerial and administrative activities, as described under the master title, 01-170 MANAGER (prof. & tech., n.e.c.) in the fields of personnel and industrial relations. Activities include: participating in establishing employee-relations policies; directing the selection, training and evaluation of employees; administering employee benefit, safety and recreation programs; developing wage and salary schedules; co-ordinating collective bargaining activities or other negotiations, and advising in the administration of labour agreements. Occupations in this unit group are engaged in managerial and administrative activities primarily related to Unit Group

1174, PERSONNEL AND RELATED OFFICERS.

2159 - ARCHITECTS AND ENGINEERS, N.E.C.

This unit group includes occupations, not elsewhere classified, concerned with the practical application of the laws and principles of architecture and engineering for the design, development, installation, production, utilization or maintenance of machines, materials, instruments, structures, processes and services.

Semi and Unskilled

4143 - ELECTRONIC DATA-PROCESSING EQUIPMENT OPERATORS

This unit group includes occupations concerned with operating electronic and electromechanical machines that record, store, process and transcribe data to and from punch cards, paper tape, magnetic tape or other sources, or are used to solve mathematical, engineering or technical problems, and to print and supply data.

4153 - SHIPPING AND RECEIVING CLERKS

This unit group includes occupations concerned with assembling, packing, addressing, stamping, loading and shipping goods; and receiving, unpacking, sorting, verifying and recording incoming goods.

4157 - WEIGHERS

This unit group includes occupations primarily concerned with weighing materials, products, railway cars and other vehicles; and keeping relevant records.